

What is claimed is:

1. A gas sensor which works to measure a given component content in a gas and has a length with a top and a base end opposed to the top end, comprising:
  - a cylindrical housing;
  - a sensing element disposed in said housing, said sensing element having a length which includes a top portion facing the top end of the gas sensor, sensitive to the gas and a base portion facing the base end of the gas sensor; and
  - a cylindrical cover assembly installed on said housing to cover the top portion of said sensing element, said cover assembly having a length with a top end facing the top end of the gas sensor and a base end facing the base end of the gas sensor, said cover assembly including a first cover and a second cover retained outside the first cover, the first and second covers having side walls, respectively, the side wall of the second cover having formed therein a plurality of gas holes through which the gas flows inside or outside said cover assembly, at least one of the gas holes partially facing the side wall of the first cover in a lateral direction perpendicular to a longitudinal direction of said cover assembly, the at least one of the gas holes having a first portion of a perimeter closest to the top end of said cover assembly and a second portion of the perimeter closest to the base end of said cover assembly, the first cover having a top end which faces the top end of said cover assembly and is located within a range defined between the first and second portions of the

perimeter of the at least one of the gas holes in the longitudinal direction of said cover assembly.

2. A gas sensor as set forth in claim 1, wherein the side wall of the first cover has formed therein a plurality of gas holes through which the gas flows inside or outside the first cover.

3. A gas sensor as set forth in claim 1, wherein the first cover has a top end facing the top end of said cover assembly and a base end facing the base end of said cover assembly, and wherein a distance  $L1$  between the first portion of the perimeter of the at least one of the gas holes of the second cover and the top end of the first cover and a diameter  $R$  of the at least one of the gas holes between the first and second portions of the perimeter thereof meets a condition of  $L1 \leq 0.95R$ .

4. A gas sensor as set forth in claim 1, wherein the second cover has a top end defining the top end of said cover assembly and a base end defining the base end of said cover assembly, and wherein a distance  $L2$  between the top end of the first cover and the top end of the second cover meets a relation of  $0.5\text{mm} \leq L2 \leq 10\text{mm}$ .

5. A gas sensor as set forth in claim 1, wherein odd ones of the gas holes formed in the side wall of the second cover partially face the side wall of the first cover in the lateral direction of said cover assembly.

6. A gas sensor as set forth in claim 1, wherein the first cover has a gas hole formed in the side wall thereof, and wherein an outer diameter  $D1$  of the first cover at the top end thereof and an outer diameter  $D2$  at a portion of a perimeter of the gas hole of the first cover closest to the top end of the first cover meet a relation of  $D1 < D2$ .

7. A gas sensor as set forth in claim 6, wherein the side wall of the first cover has a wall portion tapering off to the top end of the first cover between the portion of the perimeter of the gas hole closest to the top end of the first cover and the top end of the first cover.

8. A gas sensor as set forth in claim 6, wherein the side wall of the first cover has a first wall portion and a second wall side located closer to the top end of the first cover than the first wall portion, the first wall portion tapering off toward the top end of the first cover, the second wall portion extending straight to the top end of the first cover and having a diameter that is uniform over a length thereof.

9. A gas sensor as set forth in claim 1, wherein the first cover has a gas hole formed in the side wall thereof, and wherein the side walls of the first and second covers have portions continuing to the base ends thereof which are in contact with each other, a distance  $L3$  between a portion of the gas hole of the first cover closest to the

base end of the first cover and a portion of a contact between the side walls of the first and second covers closest to the top end of the first cover being less than or equal to 5mm.

- 5    10.    A gas sensor as set forth in claim 2, wherein said sensing  
element includes at least one solid electrolyte body and a pair of  
electrodes disposed on the solid electrolyte body, and wherein one of  
the electrodes closer to the base end of the gas sensor has a portion  
closest to the based end of the gas sensor, one of the gas holes of the  
10   first and second covers closest to the base end of the gas sensor  
having a portion closest to the top end of the gas sensor, the portion  
of the gas hole closest to the top end of the gas sensor being located  
closer to the top end of the gas sensor than the portion of the  
electrode closest to the base end of the gas sensor.